

Claims

1. A rewinding machine comprising: a winding system (1, 2, 3) and a path for feeding a web material (N) towards said winding system, characterized in that along said feed path at least one suction member (23) is positioned to temporarily obstruct feeding of the web material and cause interruption thereof at the end of winding of each log (R).

5 2. Rewinding machine as claimed in claim 1, characterized in that said winding system is a surface winding system comprising a winding cradle.

3. Rewinding machine as claimed in claim 1 or 2, characterized in that said suction member is in a substantially fixed position.

10 4. Rewinding machine as claimed in claim 1 or 2, characterized in that said suction member is movable at a substantially different speed from the feed speed of the web material.

15 5. Rewinding machine as claimed in one or more of the preceding claims, characterized by a winding core (A1, A2) feeder (19, 21), to feed winding cores into an insertion path (17) towards said winding cradle (1, 2, 3).

6. Rewinding machine as claimed in claim 5, characterized in that along said insertion path (17) at least one winding core feed member (13, 13A) is positioned, which moves forward at a speed substantially equal to the speed of the web material.

20 7. Rewinding machine as claimed in claim 6, characterized in that along said insertion path (17) a rolling surface (15) for said cores is positioned, which forms with said feed member (13) an insertion channel (17) for the winding cores.

8. Rewinding machine as claimed in claim 7, characterized in that said rolling surface and said core feed member are arranged so that the web material is fed between the core and the feed member (13) when the core (A1, A2) is in said insertion path (17).

25 9. Rewinding machine as claimed in one or more of the preceding claims, characterized by a counter surface (33A; 55A) along which said web material (N) runs and along which the suction member (23) applies suction on the web material.

30 10. Rewinding machine as claimed in claim 9, characterized in that along said counter surface at least one suction aperture (37; 59) is provided extending in a direction crosswise to the feed direction of the web material.

11. Rewinding machine as claimed in claims 6 and 9 or 6 and 10, characterized in that said at least one feed member feeds the cores along said counter surface (33A; 55A).

12. Rewinding machine as claimed in claims 7 and 11, characterized in that said

counter surface (33A; 55A) is opposed to said rolling surface (15), the cores (A1, A2) being inserted between said counter surface and said rolling surface, with the web material (N) positioned between the cores and the counter surface.

13. Rewinding machine as claimed in claim 9 or 10 or 11 or 12, characterized in  
5 that said counter surface (33A; 55A) is a fixed surface.

14. Rewinding machine as claimed in claim 10 or 11 or 12, characterized in that  
said feed member comprises at least one flexible member (13A) running along said counter  
surface.

15. Rewinding machine as claimed in one or more of the preceding claims,  
10 characterized in that said suction member (23) comprises a sliding valve (39; 65) for rapid  
opening and closing of suction holes (37; 63) via which said suction member applies  
suction on said web material, said sliding valve being activated in connection with a  
switchover phase of the winding cycle performed by said rewinding machine.

16. Rewinding machine as claimed in one or more of the preceding claims,  
15 characterized in that it comprises a first winding roller (1) around which at least one  
flexible member (13A) runs with which the web material fed to said winding cradle is in  
contact; and in which said suction member (23) is combined with said flexible member  
presenting a counter surface (33A; 55A), the flexible member (13A) moving along said  
counter surface.

20 17. Rewinding machine as claimed in claim 16, characterized in that it  
comprises a second winding roller (2), defining with said first winding roller (1) a nip (5)  
for passage of the web material.

18. Rewinding machine as claimed in claims 5 and 17, characterized in that said  
nip is positioned substantially at the end of said insertion path (17) of the winding cores  
25 (A1, A2).

19. Rewinding machine as claimed at least in claim 5, characterized in that said  
core insertion path is substantially rectilinear.

20. Rewinding machine as claimed in claims 18 and 19, characterized in that  
said insertion path, said nip and said first and second winding roller are positioned and  
30 designed so that the winding core moves in a substantially rectilinear direction along said  
path and during the winding phase in contact with said first and second winding roller.

21. Rewinding machine as claimed in one or more of the preceding claims,  
characterized in that said at least one suction member is provided with at least one aperture  
(59) crosswise to the feed direction of the web material.

22. Rewinding machine as claimed in claim 21, characterized in that said at least one crosswise aperture (59) communicates with a timed suction chamber (53), which can be connected to a suction source.

5 23. Rewinding machine as claimed in claim 22, characterized in that said timed suction chamber (53) can be connected by means of an opening and closing member (61-65), controlled in a timed manner, to a continuous suction chamber (51), where a substantially continuous underpressure is maintained.

10 24. Rewinding machine as claimed in claim 23, in which said opening and closing member comprises a sliding plate (65), provided with a plurality of apertures (67), it being possible to position said plate in a position in which said apertures are aligned or alternatively offset with respect to corresponding apertures (63) in a separation wall between said timed suction chamber (53) and said continuous suction chamber (51).

15 25. Rewinding machine as claimed in claim 24, characterized in that said apertures in the plate and said apertures in the separation wall have an elongated configuration in the feed direction of the web material.

26. Rewinding machine as claimed in one or more of the preceding claims, characterized by glue application means for applying glue on said cores.

20 27. Rewinding machine as claimed in one or more of the preceding claims, characterized by blower nozzles (81, 83, 85) to facilitate winding of the free edge around the winding core.

28. Rewinding machine as claimed in claim 27, characterized in that it comprises at least one first and one second set of blower nozzles (81, 83) arranged upstream and downstream of the web material suction application area.

25 29. Rewinding machine as claimed in claim 28, characterized in that said first and said second set of blower nozzles (81, 83) are arranged on the same side of the core insertion path.

30 30. Rewinding machine as claimed in claim 27, 28 or 29, characterized in that it comprises a third set of blower nozzles (85).

31. Rewinding machine as claimed in one or more of the claims 27 to 30, characterized in that at least one of said sets of blower nozzles is oscillating or rotating around an axis crosswise with respect to the feed direction of the web material.

32. Rewinding machine as claimed in claims 30 and 31, characterized in that said third set of blower nozzles (85) is oscillating.

33. Rewinding machine as claimed in at least claims 30 and 32, characterized in

that said third set of blower nozzles (85) is arranged on the opposite side of the core insertion path with respect to said first and said second set of blower nozzles (83, 85).

5 34. Rewinding machine as claimed in one or more of the claims 27 to 33, characterized in that it has no means for applying glue to the winding cores, the winding of each log being started by means of blower nozzles.

35. Rewinding machine as claimed in one or more of the preceding claims, characterized in that the core insertion path is designed and arranged so that each core rolls along said path for a distance sufficient to transfer part of the glue previously applied on said core to a portion of web material designed to form the final free edge of the log (R).

10 36. Method for the production of logs of wound web material, comprising the following phases:

- feeding the web material to a winding system;
  - winding a first log (R) of web material;
  - interrupting the web material at the end of winding of said first log, forming a final free edge (Lf) of said first log and a initial free edge (Li) for winding of a second log (R);
- 15 characterized in that said web material is interrupted by means of timed suction, which obstructs the feed thereof.

37. Method as claimed in claim 36, characterized in that said winding system is a surface winding system comprising a winding cradle.

20 38. Method as claimed in claim 36 or 37, characterized in that the web material is fed along a counter surface (33A; 55A), on which said suction is applied.

39. Method as claimed in claim 38, characterized in that said counter surface is fixed.

25 40. Method as claimed in claim 38, characterized in that said counter surface is movable at a different speed with respect to the feed speed of the web material.

41. Method as claimed in claim 38, 39 or 40, characterized in that at least one suction aperture (37; 59) is provided along said counter surface and suction is applied on said web material (N) when it moves along said counter surface.

30 42. Method as claimed in one or more of the claims 36 to 41, characterized in that said logs of web material are wound on winding cores (A1, A2), said cores being fed along an insertion path (17) towards said winding cradle (1, 2, 3).

43. Method as claimed in claims 38 and 42, characterized in that said counter surface extends along said insertion path.

44. Method as claimed in claim 29 or 30, characterized in that a winding core

(A1, A2) is moved along said counter surface, with the web material (N) fed between the counter surface and the winding core, the core advancing in contact with the web material at the same feed speed as the web material.

45. Method as claimed in claim 44, characterized in that said timed suction is applied downstream of the position of said core along the insertion path causing interruption of the web material downstream of said core.

46. Method as claimed in claim 43, 44 or 45, characterized in that a core feed member is provided along said counter surface.

47. Method as claimed in claim 46, characterized in that said core feed member is moved at a speed substantially corresponding to the feed speed of the web material (N).

48. Method as claimed in claim 46 or 47, characterized in that the web material (N) is passed between said feed member and the core which presses the web material against the feed member.

49. Method as claimed in one or more of the claims 42 to 48, characterized in that glue (C) is applied on said winding cores (A1, A2).

50. Method as claimed in claim 49, characterized in that said glue is applied according to at least one longitudinal line.

51. Method as claimed in claim 49 or 50, characterized in that at least a part (C1) of said glue (C) is transferred to a portion of web material belonging to the final free edge (Lf) to close the final free edge of said log.

52. Method as claimed in one or more of the claims 42 to 51, characterized in that winding of the initial free edge (Li) around said winding core is started or facilitated by means of one or more jets of air.

53. A log of wound tissue paper, without winding core or mandrel and comprising a central hole, characterized in that the first turn of said log is without fold.

54. A log of wound tissue paper, with a central winding core to which the initial edge of said paper is anchored by means of glue applied along a longitudinal line, characterized in that the first turn of said log is without fold.